# Transport and Infrastructure Net Zero Consultation Roadmap

## Take the survey

Department of Climate Change, Energy, Environment and Water

Response received at:
August 6, 2024 at 5:41 PM GMT+10

Response ID:
**sbm2fbcbb32189c024af2e41**

**1** Confirm that you have read and understand this privacy notice.
Yes

**2** Please indicate how and if you want your submission published.
Public

**3** Published name
Austroads

**4** Confirm that you have read and understand this declaration.
Yes

**5** First name
John

**6** Last name
Gordon

**7** Email
[redacted]

**8** Phone

[redacted]

**9** Who are you answering on behalf of?

Organisation

**10** Organisation name

Austroads

**11** What best describes you or your organisation?

Government

**12** What sector do you represent?

Heavy road vehicles (trucks, buses etc.)
Light road vehicles (cars, utes etc. )
Active transport
Public transport
Infrastructure

**13** What state or territory do you live in?

Victoria

**14** Postcode

3000

**15** What area best describes where you live?

City

**16** 1. Do you support the proposed guiding principles?

Yes

**17** 1.1 Please add details to your response.

See attached submission

18 2. Do you support the use of the avoid-shift-improve framework as a tool to identify opportunities for abatement?

Yes

19 2.1 Please add details to your response.

See attached submission

20 3. Do you agree the development of a national policy framework for active and public transport will support emissions reduction?

Yes

21 3.1 Please add details to your response.

See attached submission

22 4. What should be included in a national policy framework for active and public transport and how should it be developed?

See attached submission

23 5. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to ensure the movement of people contributes to transport emissions reduction?

See attached submission

24 6.1 What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to ensure that the movement of goods contributes to transport emissions reduction?

See attached submission

25 6.2. How would these actions address the identified challenges and opportunities for emissions reduction in the movement of goods?

See attached submission

**26** 7. Do you agree with the proposed net zero pathway for light road vehicles?

Yes

**27** 7.1 Please add details to your response.

See attached submission

**28** 8. The Australian Government is currently developing an Australian New Vehicle Efficiency Standard and has already begun to implement actions in the National Electric Vehicle Strategy.8.1 What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce light vehicle emissions?

See attached submission

**29** 8.2 How would these actions address the identified challenges and opportunities to reduce light vehicle emissions?

See attached submission

**30** 9. Do you agree with the proposed net zero pathway for heavy road vehicles?

Yes

**31** 9.1 Please add details to your response

See attached submission

**32** 10. The proposed pathway for heavy road vehicles relies on a mix of battery electric, hydrogen fuel-cell and low carbon liquid fuels.Rank from 1 to 3, the order in which these should be prioritised for emissions reduction.

Not answered

**33** 10.1 Please add details to your response. Why did you rank them in that

order?

See attached submission

34 11. What role should low carbon liquid fuels play in the heavy vehicle decarbonisation?

See attached submission

35 12. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce heavy vehicle emissions?

See attached submission

36 13. Do you agree with the proposed net zero pathway for rail?

Not answered

37 13.1 Please add details to your response.

Not answered

38 14. The proposed pathway for rail relies on a mix of battery electric, hydrogen fuel-cell and low carbon liquid fuels.Rank from 1 to 3, the order in which these should be prioritised for emissions reduction.

Not answered

39 14.1 Please add details to your response. Why did you rank them in that order?

Not answered

40 15. What role should low carbon liquid fuels play in rail decarbonisation?

Not answered

41 16. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to

reduce rail emissions?

Not answered

42 16.1 How would these actions address the identified challenges and opportunities to reduce rail emissions?

Not answered

43 17. Do you agree with the proposed net zero pathway for maritime?

Not answered

44 17.1 Please add details to your response.

Not answered

45 18. The Australian Government is engaging in consultation as part of the development of the Maritime Emissions Reduction National Action Plan and those consultations will also inform the final Roadmap and Action Plan. 18.1 What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce maritime emissions?

Not answered

46 18.2 How would these actions address the identified challenges and opportunities to reduce maritime emissions?

Not answered

47 19. Do you agree with the proposed net zero pathway for aviation?

Not answered

48 19.1 Please add details to your response.

Not answered

49 20. The Australian Government has already engaged in consultation on aviation decarbonisation through the development of the Aviation

White Paper and those consultations will also inform final Roadmap and Action Plan.

Not answered

50 20.1 What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce aviation emissions?

Not answered

51 21. Do you agree with the proposed net zero pathway for transport infrastructure?

Yes

52 21.1 Please add details to your response.

See attached submission

53 22. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce transport infrastructure emissions and ensure that transport infrastructure is ready for and enables low-emission transport modes?

See attached submission

54 22.1 How would these actions address the identified challenges and opportunities to reduce transport infrastructure emissions?

See attached submission

55 23. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to ensure the energy mix is ready to support transport emissions reduction?

See attached submission

56 24. How should the use of low carbon liquid fuels (LCLFs) be prioritised

across different transport modes over time to achieve maximum abatement?

See attached submission

57 25. What are the best ways for the Australian Government to work collaboratively with industry, business, governments and communities to implement the proposed pathways?

See attached submission

58 25.1 What are good domestic or international examples of partnership and collaboration on transport and transport infrastructure emissions reduction that could inform the final Roadmap and Action Plan?

See attached submission

59 25.2 What opportunities can Government leverage to show leadership in Australia and internationally?

See attached submission

60 26. What measures and metrics should be used to evaluate the final Transport and Infrastructure Net Zero Roadmap and Action Plan?

See attached submission

61 26.1 What other data and evidence could governments use and how could this offer further insights on the pace, scale and location of transport emissions reduction pathways?

See attached submission

62 27. Do you have any feedback on the proposed review process?

See attached submission

63 28. Do you have any further feedback on the Consultation Roadmap and proposed pathways?

See attached submission

64 28.1 Is there anything missing? Are the sections appropriately integrated? Is the Roadmap appropriately ambitious?

See attached submission

65 29. Is there any further information or documentation that you wish to be considered with your submission?

See attached submission

66 Would you like to upload a document?

Yes

67 Have you removed any identifying information from your submission?

Yes

68 Upload a submission

253 Redacted
Austroads_Submission_Transport_and_Infrastructure_Net_Zero_Consultation_Roadmap.0cb031a6.pdf

69 Upload a submission

Not answered

70 Upload supporting file

Not answered

71 Upload supporting file

Not answered

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6 August 2024

*By email: NetZero@infrastructure.gov.au*

## Submission: Transport and Infrastructure Net Zero Consultation Roadmap

Thank you for offering the opportunity for Austroads to comment on the Transport and Infrastructure Net Zero Consultation Roadmap.

## Purpose of submission

The purpose of this submission is to propose tangible actions that Austroads can play a role to support the Roadmap towards Net Zero by 2050. The appendix highlights key areas that Austroads can drive change in active transport, freight and passenger movement decarbonisation, emission reduction of vehicles, and infrastructure carbon intensity reduction, and improved coordination of policy initiatives.

This submission will primarily focus on answering questions relating to supporting the delivery of the Transport and Infrastructure Net Zero Roadmap. This submission highlights several areas Austroads can support delivery of the Net Zero Roadmap, through research, guidance, and services supporting members to plan, design, deliver and operate our transport networks.

Austroads can support the implementation of this Roadmap through collaboration and coordination between partners who are essential to deliver on its actions.

## Role and function of Austroads

Austroads is the association of the Australian and New Zealand transport agencies, representing all levels of government.

Austroads solves problems for transport agencies in Australia and New Zealand. We focus on making mobility safer and more reliable for all users and our transport infrastructure sustainable and future-proof. We also provide national services that help transport agencies to operate seamlessly across state borders and bring national efficiencies to their operations.

The Department of Infrastructure, Transport, Regional Development, Communications and the Arts is our member from the Australian Government. The Australian Local Government Association (ALGA) is also a member of Austroads, representing local governments.

Austroads develops, maintains, and promotes the use of nationally consistent guidance, standards on behalf of our members and other stakeholders. While Austroads research and guidance was historically founded on the road sector, we now undertake research and guidance across multiple modes and sectors reflecting our member's multimodal remit. The following specific Austroads areas of expertise are most relevant:

- Active Transport (Chapter 2)
- Vehicle Emissions and Freight Decarbonisation specifically (Section 3.1 & 3.2)
- Infrastructure emissions (Chapter 4)
- Delivering co-benefits through policy integration.

## Working with you to deliver outcomes

25. What are the best ways for the Australian Government to work collaboratively with industry, business, governments and communities to implement the proposed pathways?
25.1. What are good domestic or international examples of partnership and collaboration on transport and transport infrastructure emissions reduction that could inform the final Roadmap and Action Plan?
25.2. What opportunities can the government leverage to show leadership in Australia and internationally?

Austroads is uniquely positioned to work with you to deliver improved outcomes which align with the goals of the Transport and Infrastructure Net Zero Roadmap. As a membership association with deep relationships into all the Australian and New Zealand transport and infrastructure authorities and local road managers with tangible road management and delivery responsibilities, Austroads is strategically placed to influence the national standards which drive real change.

The way road networks are designed, delivered and maintained is a critical but often underestimated enabler of net zero pathways.

Austroads has built strong relationships with the key industry associations including the Australian Flexible Pavement Association (AfPA), the Pavement Recycling and Stabilisation Association (AustStab) and Cement Concrete and Aggregates Australia (CCAA). Our collaboration with these associations is already delivering results towards Net Zero through improvements in the planning, design and delivery of road infrastructure. Austroads is working closely with the AfPA and the Royal Melbourne Institute of Technology (RMIT) on a project to incorporate recycled plastic from consumer and industrial waste into road construction materials.

We note that the government has proposed three categories of emissions from infrastructure. This is a good start, however, based on work by Austroads and our members, there is an opportunity to better target actions to reduce emissions. Further information on how to achieve this and how Austroads can play an active role is in the Appendix.

**Austroads proposes the following actions be included in the Net Zero Roadmap, if funding is available:**

- Accelerating implementation of the recommendations of the recently published Austroads report, *AP-R711-24 Prioritising Active Transport*.
- Undertake a road user charging proof-of-concept leveraging existing investment by Australian transport agencies.
- Compare Australian and international maintenance and funding strategies with logistics and freight task characteristics.
- Explore how road and rail freight task modal substitution may influence decision making on heavy vehicle access and mass policy.
- Investigate cost recovery mechanisms for road network maintenance and consider how current processes influence outcomes identified by cost-benefit assessments into increased mass limits.
- Investigate electric heavy vehicle operating costs (drawing on ATAP Vehicle Operating Cost Model as a basis) to present cost savings in vehicle maintenance for heavy vehicles.
- Accelerating research to better understand the impact of increasingly heavy vehicles on the road network, both to support cost recovery under future road user charging arrangements, but also to support better planning for policy options to decarbonise freight.
- Consider adopting actions proposed by the *Austroads project EAS6361 – Transport Agency Emission Reduction Opportunities*, which will soon publish an internal report for road agencies presenting a 'state of play' of enablers and interventions available to mitigate road sector emissions.
- Investigate impacts of embodied carbon due to increased maintenance requirements.
- Exploring (and accelerating research into) low carbon concrete options through the Smartcrete Cooperative Research Centre (CRC) and collaboration with Cement Concrete and Aggregates Australia (CCAA), which Austroads is already seed-funding and collaborating with.
- Accelerate the recently approved Austroads project to develop, build and operate an Austroads carbon measurement and reporting tool that will be available for all of its members.
- Support the incorporation of decarbonisation drivers through procurement.
- Support adoption of actions proposed by Austroads project *EAS6420 – Austroads technical specification sustainability review to increase national; harmonisation of standards by addressing barriers and opportunities for decarbonisation through the Austroads Technical Specifications (ATS) and Test Methods*.
- Accelerate Austroads project *SAG6506 Guidance on speed management* to provide clear guidance to road managers on optimising speed for vehicle emissions and crash outcomes.

Austroads is well positioned to support the development of further actionable steps to realise the objectives of the Roadmap.

With its strong membership model, deep links into both the government agencies responsible for delivering changes in transport across Australia, and the construction industry that delivers our transport infrastructure, Austroads can mobilise change.

I welcome the opportunity to discuss things further. [redacted] would be pleased to provide further information or make any necessary arrangements to support the finalisation of the Consultation Roadmap, and implementation of the approved Roadmap. [redacted] can be contacted at [redacted]

Yours sincerely

[redacted]

## Appendix A – Responses to the Consultation Roadmap

Austroads members are at the fore in planning how to rethink Australian transport systems and networks. Members are working to achieve net zero targets while also aiming to deliver other vital benefits for Australians. Austroads members are already working to support net zero through:

- **Planning** – both short and long term, to support a shift to sustainable, low emissions ways of moving people and goods
- **Designing** – ensuring networks exemplify best practice in the allocation of contested spaces such as transport corridors for different user groups, modes, and times
- **Delivering –** utilising innovative technologies to build low carbon infrastructure
- **Operating –** operating networks to reduce emissions, focus investment on supporting infrastructure, and improve maintenance to extend the life of existing infrastructure
- **Managing policy, regulation and practice –** for vehicle registration, driver licensing, vehicle regulation, road rules, enforcement (partially) and have strong influence over land use planning and many other relevant matters.

High impact solutions to resource these steps could include road user charging, kerbside management, increased connectivity, and increases prioritisation for active and public transport. Austroads is currently delivering a research project for its members (EAS6361: Transport Agency Emissions Reduction Opportunities and other sources) which will develop tangible decarbonisation proposals which could be included in the Net Zero Roadmap, if members commit to their delivery.

### Active Transport

**Have Your Say**

3. Do you agree the development of a national policy framework for active and public transport will support emissions reduction?

    3.1. Please add details to your response.

4. What should be included in a national policy framework for active and public transport and how should it be developed?

5. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to ensure the movement of people contributes to transport emissions reduction?

#### *Mode Shift*

Austroads can help the Government increase active travel mode share. In the recently published Austroads report, AP-R711-24 Prioritising Active Transport, it was found that to enable mode shift, a combination of interventions that encourage active travel and discourage car use would be most effective. Interventions were scored based on impact, cost and complexity, and the interventions that scored highly include:

- Transit-oriented development / pedestrian-oriented development
- Bike modal filters
- Shared bike lanes, specifically in conjunction with lower speeds
- Separated bike lanes (pop-up)
- Footpaths and crossings
- Place-making
- Bike share schemes
- Bike parking in-building and at stations and end of trip facilities
- Integration of active modes with public transport
- Road user pricing
- Travel behaviour change programs / special events.

**Proposed action:**

- Accelerating implementation of the recommendations of implementing the recently published Austroads report, *AP-R711-24 Prioritising Active Transport*, which found that to enable mode shift, a combination of interventions that encourage active travel and discourage car use would be most effective.

#### *Road User Charging Pilots*

Australian and international research supports the potential for more equitable road user charging to support less carbon intensive forms of passenger transport (such as active transport and public transport) and encourage mode shift, as well as reducing revenue leakage. This could be utilised to disincentivise unnecessary car use, encourage low and zero emission vehicles, and encourage (including through cross-subsidisation) the use of public and active transport modes.

We note that the Consultation paper canvasses a net zero pathway for active and public transport, that implies consideration of differential road user charging. The paper states that the option to encourage the uptake of electric vehicles through road pricing reforms is being progressed by the Commonwealth and states and territories on long-term options for zero emission vehicle user charging.

Austroads is not a policy agency, and we do not seek to influence the policy being considered by governments, however, Austroads does provide advice on technical solutions to support policy implementation and to operate collective services on behalf of the Austroads roads and transport departments.

Austroads has the functional architecture that can be adapted to implement a real time charging system that can, in line with the proposal in the consultation paper, encourage mode shift from private vehicles to public and active transport to improve the efficiency of the transport system.

A charging system architecture requires several main elements. Austroads currently has systems that provide the three necessary elements to assess road consumption and capacity use:

- **road use measurement**, the quantification of the amount of road use and externalities created, that can include:
  - measuring road use, such as time, location, and emissions, and
  - external traffic conditions such as real-time traffic density and effective level of service
- **data communication**, the communication of the road use data to an entity to combine elements to support billing for use (see Austroads Webinar: Developing the Data to Support Heavy Vehicle Road Reforms),
  - registration, which has the road user's details for:
    - unique vehicle characteristics, such as mass and model of vehicles, and
    - vehicle owner and related details such as bank account details
  - billing and information, which links a vehicle owner to the vehicle's use and issues an invoice for road use and consumption.
- **assurance** of road use measurement and data communication is needed to prevent and detect data quality issues, and deliberate fraud, and to recover errors.

Several of these functional system elements are operated currently by Transport Certification Australia (TCA), a wholly owned subsidiary of Austroads. TCA operates consistent with the National Telematics Framework, which provides the conceptual structure to monitor a vehicle's location at time intervals consistent with international standards and nationally agreed levels of assurance.

Austroads has long demonstrated this capability through the Administration of the National Exchange of Vehicle and Driver Information System (NEVDIS) which provides an authoritative source of registration and owner information for vehicles. Austroads also operates billing systems for services on behalf of members, and the vehicle telematics systems which Austroads assures under the National Telematics Framework has been recognised by the Australian Taxation Office as suitable for calculating fuel tax credits.

Austroads demonstrated the knowledge and capacity to provide the technical architecture to support (or act as) a road use charging entity, but also has the sophistication to ensure that it could also account for charges for externalities such as congested roads. As the Consultation paper notes, active and public transport can make a significant contribution to reducing transport emissions, while easing congestion.

Conversely, should governments want to have the ability to charge a higher 'capacity' road use fee for congested roads, that fee could be applied to subsidise public transport or fund additional active transport options. Austroads could deliver this capability for governments and suggests that a proof-of-concept might be a viable method for demonstrating this capability and identifying areas of operational policy needing refinement.

**Proposed action:**

- Undertake a road user charging proof-of-concept leveraging existing investment by Australian transport agencies in the National Telematics Framework, NEVDIS and other systems.

## Vehicle Emissions and Freight Decarbonisation

6.1. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to ensure that the movement of goods contributes to transport emissions reduction?

7. Do you agree with the proposed net zero pathway for light road vehicles?

8.1 What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce light vehicle emissions?

9. Do you agree with the proposed net zero pathway for heavy road vehicles?

11. What role should low carbon liquid fuels play in heavy vehicle decarbonisation?

12. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce heavy vehicle emissions?

Decarbonisation of road freight is crucial to achieve net zero targets. Determining the optimal policy toolkit to achieve this will require balancing impacts on infrastructure, environment, and the economy, and Austroads is already active in developing a suite of suitable activities (as highlighted above).

### *Managing Heavier Vehicles on Australian Roads*

Most battery electric, hydrogen and other low emission vehicles are heavier that comparable traditional combustion engine vehicles. This creates a complex policy environment where increasing the use of low emission vehicles can lead to more wear-and-tear on road pavements and structures, which can lead to increased emissions and costs from recurring maintenance.

Austroads is actively leading national research to identify and develop standard processes for optimal pathways to manage this complex interaction. This could be accelerated to support the Net Zero Roadmap.

Compared with some international jurisdictions, road infrastructure in Australia is less suitable to support increased mass for Zero Emission Heavy Vehicles (ZEHV). Australian road networks are designed and constructed to a lower strength, reflecting pragmatic choices to expand and operate road networks over large distances, with low population density. Furthermore, previous increases to mass limits have already pushed the capacity of pavement infrastructure in Australia. In some international jurisdictions where axle load limits have recently been increased (such as the UK and Sweden), the pavement assets are not similarly constrained. In the US, there has been no increase in mass limits in the last 50 years, reflecting local concerns regarding the capacity of bridge infrastructure.

As an example, we know that pavement wear increases as heavy vehicle masses increase, but the precise impacts are not well understood. Current research indicates that the mass-to-damage impact involves an exponent factor of 4 for granular materials and up to 12 for cemented materials. This means that a relatively low increase in loads can cause a huge reduction in pavement life, especially thin pavements. Further data on the impact of mass for specific pavement types and conditions is needed to better estimate the consumption of life and costs of utilising these vehicles. While pavements are critical to this consideration. Other elements such as road structures (bridges and culverts) need to be factored in as key points of vulnerability across the network.

Austroads proposes below some new and accelerated research to support the following key (and subsequent) decisions by government:

1. Allow vehicles to maintain their current payload, which will necessitate government either:
    a. needing to increase maintenance investment to address increased road deterioration; or
    b. accept a reduced level of service. (Noting that any level of service reduction would apply to all road users).
2. Require heavy vehicle operators to absorb the additional mass of the vehicles within existing mass limits for vehicles, resulting in:
    c. Reduced uptake in low and zero emission vehicles (especially ZEHVs); and potentially increased transport and logistics costs which will be passed on to the consumer
    d. Increased freight vehicles and freight journeys required to undertake the currently growing freight task (which ironically might also cause increased pavement damage)
    e. The need to explore and reply on other policy levers such as road user charging incentives to incentivise uptake of lower emission freight vehicles.

**Proposed actions:**

- Compare Australian maintenance and funding strategies and international logistics and freight task characteristics with international jurisdictions.
- Explore how road and rail freight task modal substitution may influence decision making on heavy vehicle access and mass policy.
- Investigate cost recovery mechanisms for road network maintenance and consider how current processes influence outcomes identified by cost-benefit assessments into increased mass limits.
- Investigate electric heavy vehicle operating costs (drawing on ATAP Vehicle Operating Cost Model as a basis) to present cost savings in vehicle maintenance for heavy vehicles.
- Accelerating research to better understand the impact of increasingly heavy vehicles on the road network, both to support cost recovery under future road user charging arrangements, but also to support better planning for policy options to decarbonise freight.

### *Managing Light Vehicle Decarbonisation*

To address light vehicle emissions, it is important to consider the rate of the transition to low emission vehicles. Many of the vehicles that are sold today will likely still be on the road by 2050. Therefore, reducing travel demand through other mechanisms such as road user pricing along with the offsetting of these emissions will need to be considered.

To accelerate the transition to lower emission vehicles, there will be a need for some intervention to enable the expansion of the charging network. Currently electric vehicle chargers, particularly in remote and rural areas, rarely "pay for themselves", funding is required from government to enable commercial charge points operators to implement charging infrastructure. There are key challenges in the reliability and electricity supply, that major grid upgrades will be required to enable fast charging. Austroads is currently conducting research in the requirements for remote and rural electric vehicle charging, as well as accessibility requirements to be incorporated into the Austroads Guidelines for Electric Vehicle Charging installation.

**Proposed actions:**

- Consider adopting actions proposed by the Austroads project *EAS6361 – Transport Agency Emission Reduction Opportunities*, which will soon publish an internal report for road agencies presenting a 'state of play' of enablers and interventions available to mitigate road sector emissions.

## Infrastructure Emissions

22. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce transport infrastructure emissions and ensure that transport infrastructure is ready for and enables low-emission transport modes?
22.1. How would these actions address the identified challenges and opportunities to reduce transport infrastructure emissions?

Chapter 4 of the Consultation Roadmap identifies that decarbonising transport infrastructure will be critical to achieving the net zero target. Austroads agrees with this assertion and has undertaken a significant body of work to better understand the likely specific areas needing to be targeted to achieve change.

Arguably, the way the road network is designed and operated is the greatest enabler of net zero pathways. To this end, network planning, road design and safety enhancements can make and immense contribution.

We note that the government has proposed three categories of emissions from infrastructure (p69). This is a good start, but Austroads proposed a more granular model given the widely varying challenges of infrastructure and the need to target actions to specific key drivers of change. Based on work by Austroads and members, we propose more detailed categories to better target actions to reduce emissions:

- Preconstruction and design
- Construction
    - Construction Greenhouse gas assessment boundary
        - Alternative processes or materials
    - Construction emission sources and required data
    - Site offices and plant
    - Plant and Equipment
    - Demolition and earthworks
    - Land clearing/land use change
    - Pavements

        - Bitumen and asphalt
        - Concrete and cement
        - Granular and quarried materials (excluding asphalt and concrete)
        - Stabilisation of Earthworks
    - Road structures
        - Design and specifications
        - Materials and technologies
        - Engineering analysis
        - Sustainability practices
        - Stabilisation methods
        - Environmental assessment
    - Drainage
    - Road furniture
        - Metals
        - Timber
        - Plastics and paints
    - Road projects that include tunnels
- Operation
    - Electricity - Lights, signals
    - Liquid fuels - Cleaning and clearing
- Maintenance
    - Routine maintenance
    - Scheduled maintenance
    - Rehabilitation
        - Material recycling and reuse
- Decommissioning.

Of these categories, the most critical are likely to be the pavements and road structures categories (as highlighted in this Austroads report).

Austroads, at the direction of its members, has developed a significant body of knowledge on the use of more sustainable construction materials and methods. With the increasing freight task, rapidly changing environmental conditions, and increasing axle masses of ZEHV, there is a significant need for further work to better understand and prepare for these impacts.

Austroads has approved funding to develop, build and operate an **Austroads carbon measurement and reporting tool** that will be available for all its members. This tool will enable effective consideration of embodies carbon impacts in options assessments and business cases and provide a means of measuring (and incentivising) contractor performance in terms of emissions reduction and recycled content.

Austroads can also assist in the incorporation of decarbonisation drivers through procurement. Austroads manages the **national prequalification scheme** and would be keen to assist in accelerating updates to the scheme to require carbon emissions reporting and management.

**Austroads project EAS6361 – Transport Agency Emission Reduction Opportunities**, will soon publish an internal report for road agencies the presents a ‘state of play’ of enablers and interventions available to mitigate road sector emissions. Enablers include leadership and governance, data, monitoring and reporting, decision making processes, standards and specifications, resourcing and skills and collaboration and innovation. The report provides a subjective assessment of where the highest potential impact for emissions reduction lies, and those interventions that score highly include; vehicle purchase and registration costs, road user pricing and vehicle usage costs, integrated land use and transport planning, public transport, non-road freight enabling low and zero emission vehicles and fuel efficiency and quality standards.

Carbon emissions reduction should be considered in decision-making, Austroads has developed a **Multi-Criteria Analysis (MCA) tool** which assist agencies in quantifying and assessing emission reductions associated with different interventions. Use of such a tool will assist in making evidence-based decisions to reduce emissions.

Austroads project **EAS6420 – Austroads technical specification sustainability review** is looking at barriers and opportunities for decarbonisation through the Austroads Technical Specifications (ATS) and Test Methods and suggest updates to them if required. The ATSs are an opportunity for standards to be harmonised nationally.

**Proposed actions:**

- Investigate impacts of embodied carbon due to increased maintenance requirements. Including gathering an understanding of the extent to which emissions reductions in the transport industry are being offset by increased emissions from increases in maintenance and construction activities resulting from increased pavement damage.
- Exploring (and accelerating research into) low carbon concrete options through the Smartcrete Cooperative Research Centre (CRC) and collaboration with Cement Concrete and Aggregates Australia (CCAA) which Austroads is already seed-funding and collaborating with.
- Accelerate the recently approved Austroads project to develop, build and operate an Austroads carbon measurement and reporting tool that will be available for all of its members.
- Support the incorporation of decarbonisation drivers through procurement. Austroads manages the national prequalification scheme and would be keen to assist in accelerating updates to the scheme to require carbon emissions reporting and management.
- Support adoption of actions proposed by Austroads project *EAS6420 – Austroads technical specification sustainability review to increase national; harmonisation of standards by addressing barriers and opportunities for decarbonisation through the Austroads Technical Specifications (ATS) and Test Methods*.

## Delivering co-benefits through policy integration

Governments have limited funding and wide-ranging policy objectives, and Austroads has a strong history of supporting its members in integrating policy and practice across disciplines to achieve co-benefits. This is achieved by embedding best practice from different disciplines into guides and standards which support everyday practitioners. These guides support coordination and integration of the efforts of governments, the private sector and community across borders and levels of government, which is essential.

Key concerns of our members include the elimination of preventable deaths and serious injuries due to crashes in road transport, vulnerability of the transport system to increasing climatic extremes, the contribution of road transport to poor public and environmental health outcomes caused by pollution, noise and the loss of flora/fauna habitat and urban canopy. Attempting to deliver any of these goals in isolation is inefficient and potentially competitive.

### *Vehicle Speed and Emission Reduction*

The most obvious example of achieving co-benefits is the management of vehicle speed in the road network. Better management of vehicle speeds reduces emissions more quickly and effectively than many other actions in the Roadmap, while also contributing to reduced trauma.

As an example of the co-benefits of transport policy integration, Austroads is currently undertaking a project to develop Guidance on speed management (SAG6506) which aims to provide clear information for road managers on ways to better manage of speeds via road design, speed limits, enforcement and technology such as Intelligent Speed Assistance to:

- reduce non-$CO_2$ air-pollution and its health consequences
- reduce deaths and injuries from crashes.

**Proposed actions:**

- Accelerate Austroads project *SAG6506 Guidance on speed management* to provide clear guidance to road managers on optimising speed for vehicle emissions and crash outcomes.